

Arch 464
ECS
Spring 2014

Name _____

Quiz #2

"You Coach House K"

For this problem you are the water use consultant for Sou Fujimoto, who has designed a single family residence for a tight site in the suburbs of Osaka, Japan. The completed building features landscape features that do little to control stormwater, much less to celebrate it. Your role is to suggest greener and more poetic alternatives for water use and treatment throughout the building and on the site.

Context. The site is in a dense residential neighborhood in the affluent outskirts of Osaka. Osaka has a mild climate with about 50 inches of rain each year, most falling Apr through Sep. The building is connected to city water supply and sewers.

Description. *Architectural Record* described the project in its Record Houses issue, April, 2013. The text of that description is on pages 2–3 of the quiz.

READ THE ENTIRE QUIZ BEFORE YOU BEGIN!



All photos and drawings: Architectural Record April 2013.



(Above) Like an engawa porch, the edge of the hanare is the ideal spot to look out and enjoy the greenery.

(Left) House K's rooftop garden is dotted with an assortment of trees and outdoor furniture configured to align with the sloping ground plane.

House K

Sou Fujimoto Architects

A Slice of Life for a Modern Family: In sharp contrast to the client's previous Western-style dwelling, this open, loftlike house encourages togetherness—a quality of life still prized by the Japanese.

By Naomi R. Pollock, AIA

Conceptually, the quirky house on an L-shaped lot in the affluent outskirts of Osaka has a lot in common with a traditional Japanese dwelling. Fixed, internal walls are conspicuously absent, furnishings delineate functional zones, and the roof is the defining architectural element. It even has a *hanare*, or freestanding room separated from the main house. But any likeness between old and new comes to a screeching halt there. Called House K after the first letter of the client's last name, the latest home from Sou Fujimoto—a Tokyo architect known to push residential design to extremes—is a single, swooping volume that emerges gently from the ground and then rapidly surges upward before tapering to a blunt point at the site's east end. Stud-ded with trees in giant steel planters, the sloped wedge of a house looks more like a man-made landform than a place to call home.

While the notion of blending architecture and landscape fascinates Fujimoto, it wasn't exactly what his clients, a couple with two school-age kids, initially had in mind. Though they had few specific requests, their first hope was to create a facsimile of *Fujimoto's House N* (which appeared in AR's April 2009 issue). But try as he might, the architect could not fit that building's nesting-box scheme on the 3,340-square-foot property, hemmed in by houses on three sides, open to a grove of trees on the fourth, and tethered to the street by a 98-foot-long path.

These constraints inspired Fujimoto to design the hill-like scheme with a folded roof, softly creased like origami paper to form two angled surfaces. As it ascends from the grove, the west-facing plane inclines from 10 degrees to 35 degrees along its length. The result is a striking exterior and spacious interior. Acting as both wall and roof, the north-facing elevation rises abruptly from the ground at 45 degrees but nears 53 degrees toward the top. Tilted sharply away from the house to the north, this angled surface yields much-needed breathing room from neighboring houses and creates a logical place for the glass-encased entrance foyer.

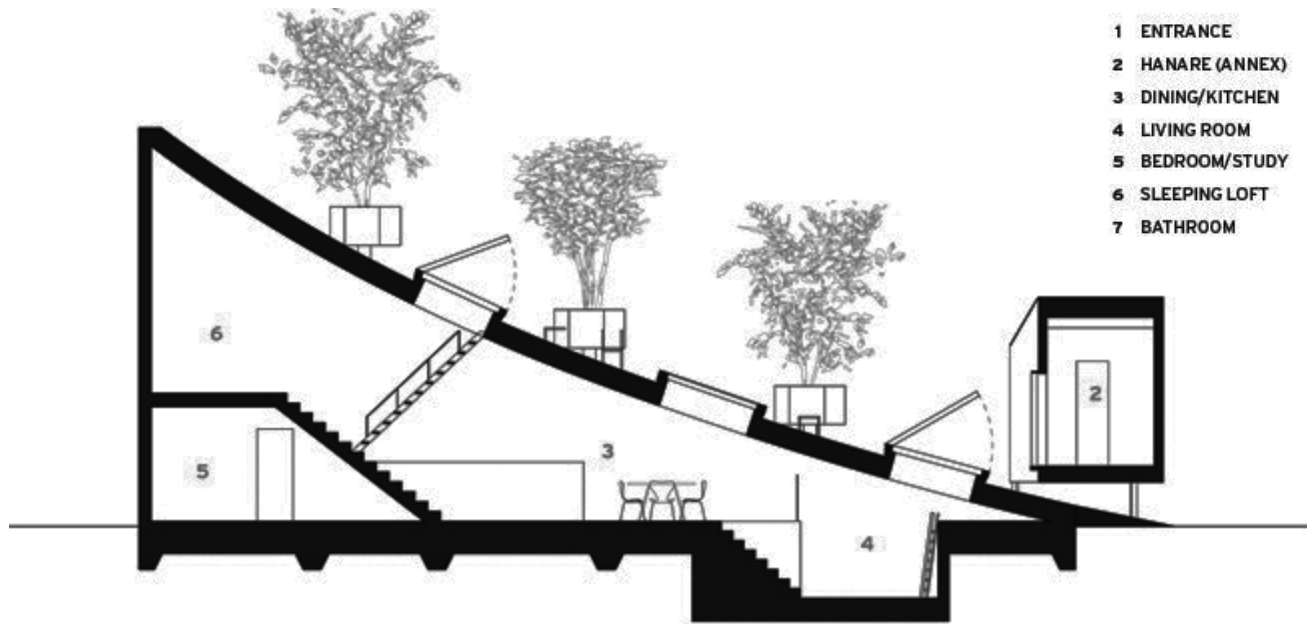
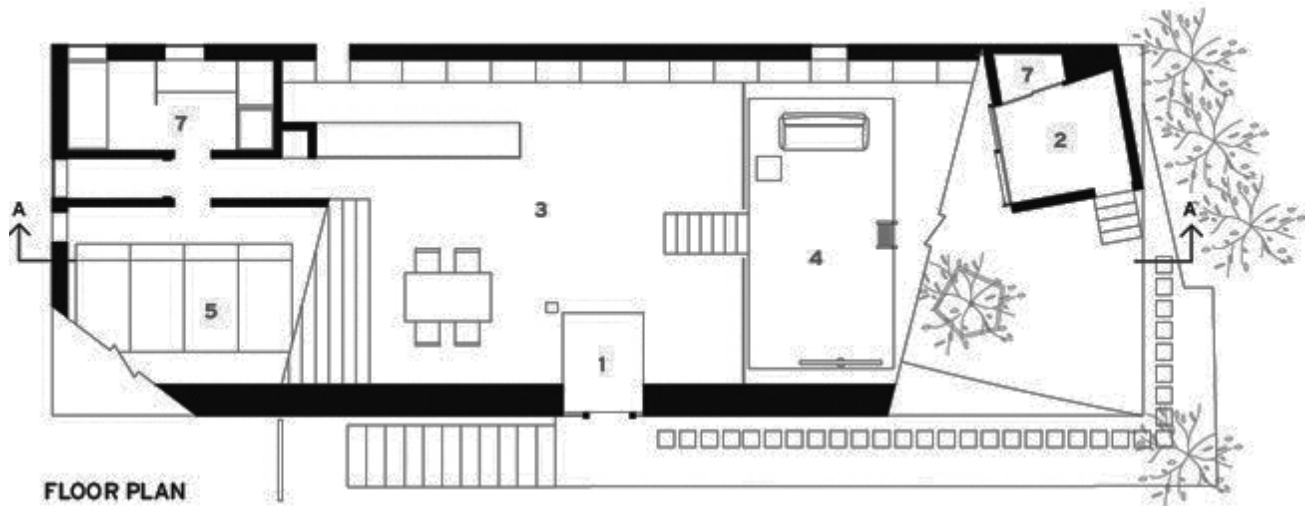
The house sits 18 feet above the end of a 10-foot-wide lane and is accessed by two flights of stairs. Protected by a canopy, the main entrance opens onto a vestibule with a tile floor that segues into the dining area and kitchen—a kind of command center with unimpeded sightlines in multiple directions. As with all Fujimoto-designed dwellings, House K contains a sequence of spaces with ambiguous borders and many possible functions. Where the ceiling rises, broad steps that double as auxiliary seating lead up to a loftlike sleeping area used by the parents. Tucked beneath are the bathroom and children's bedroom—the only spaces with bona fide walls and doors. On the opposite side of the house, a stair leads to a sunken living area beneath the descending ceiling. The *hanare*, perched at the roof's lowest part, provides a private getaway, with a sitting area and powder room.

An antidote to the communal lifestyle prescribed by Fujimoto's architecture, the *hanare* also establishes visual balance. "If the roof was completely naked, it would be too strong," the architect explains. "And from the start I wanted to make it a field for activity." The roof garden supplies the clients with precious outdoor space where the kids can play and the family can enjoy ice cream on hot summer evenings.

Not surprisingly, the roof was the most difficult part of the house to construct. To keep costs down, Fujimoto opted for a steel-frame system made of 4-by-4-inch H-beams spaced 3 feet apart. Joined with rigid welded or bolted connections, the frames are linked by connecting beams at the roof's edges. They support a 3-inch-thick concrete skin that was applied by hand and then finished with waterproofing and paint. Inside, painted plasterboard walls and ceiling contrast softly with white-tinted birch floors. Custom furniture and the potted trees, anchored to the structure, dot the roofscape, along with six large skylights—two of them operable, enabling indoor-outdoor circulation via ladders from the sunken living room and loft stairs.

With its curving trajectory, House K marks a dynamic new direction for Fujimoto. Not everyone would feel at home with its unusual geometry, especially where safety is concerned. While the loft's broad stairs and the low railings rimming the living area were configured to prevent falls, the roof is devoid of parapets and guardrails. The trade-off for watching one's step, however, is a chance to live in a place that expands the very notion of what a home and garden can be, elevating it to new heights and possibilities.

Completion Date: July 2012



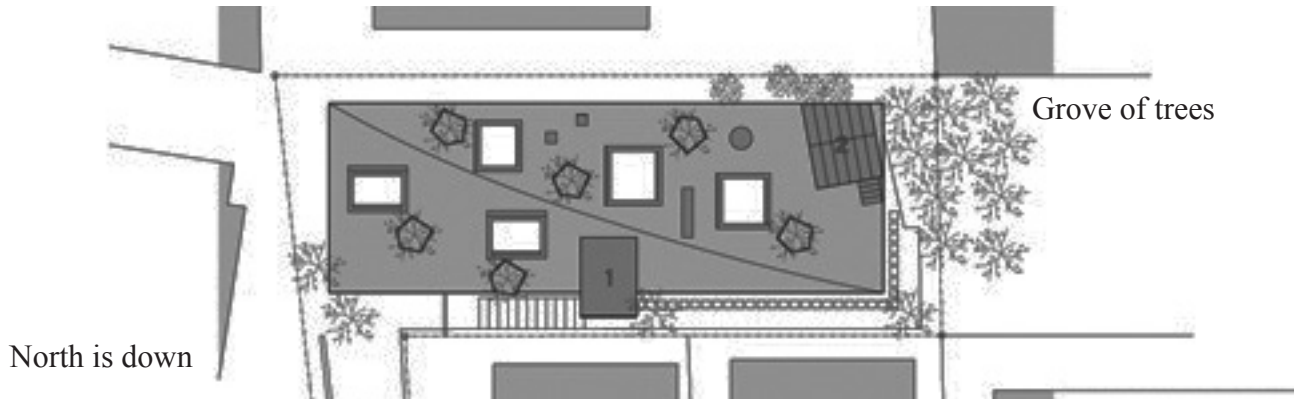
- 1 ENTRANCE
- 2 HANARE (ANNEX)
- 3 DINING/KITCHEN
- 4 LIVING ROOM
- 5 BEDROOM/STUDY
- 6 SLEEPING LOFT
- 7 BATHROOM

0 10 FT.
3 M.



Inside, level changes and furnishings divide the space, enabling family members to remain in each other's presence even when engaged in different activities. Bleacherlike stairs lead up to a sleeping loft and conceal the children's bedroom, bathroom, and study behind.

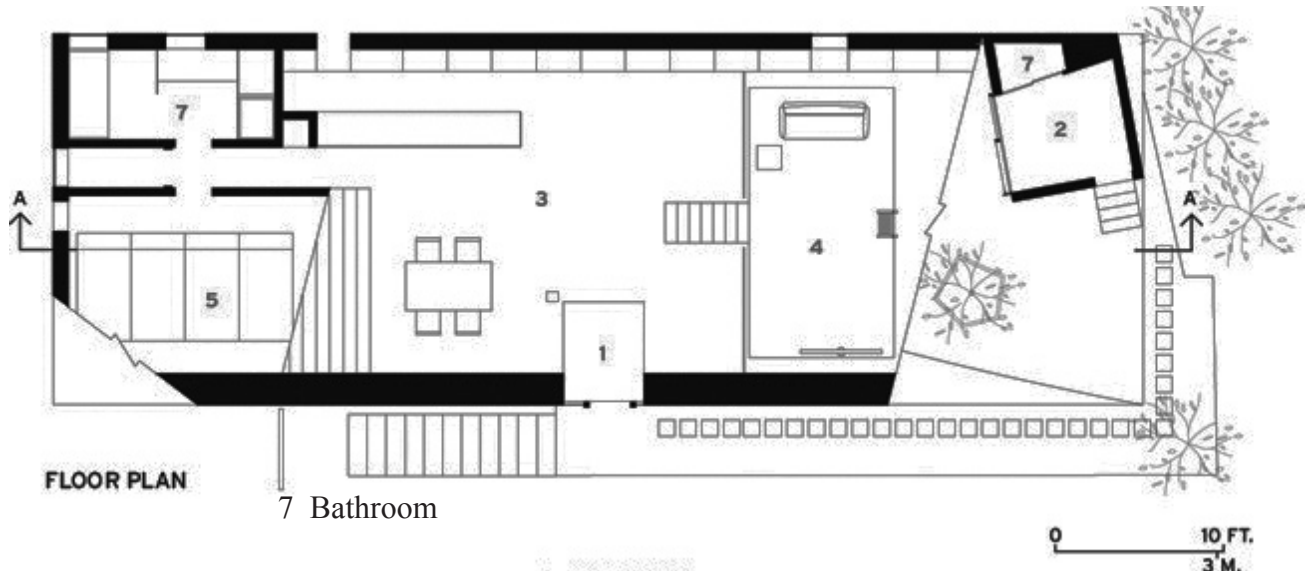
- 3 pts. 1. **Describe two** strategies the architect could have planned to employ (but didn't) and one that was employed to manage stormwater. Use the section on page 3 as well as the roof and site plan below to **show** how each impacts the site plan. **Critique each** for its merits, aesthetics, and limitations on this site.



STREET SMART

Direct street access wide enough for emergency vehicles is required of all residential properties in Japan. Turning the long approach to house K into a pleasant transitional space, Fujimoto covered it with gravel, dotted the perimeter with trees, and threaded a meandering path along the middle, leaving space for the mandated off-street parking on one side (far left). The path leads to both the storage vault that holds bicycles, fishing rods, and other large objects and the first run of stairs leading up to the house (left).

- 4 pts. 2. **Describe two options** the architects could have planned to employ (but didn't; he followed code) to demonstrate alternative means to deal with black water. On the typical plans below show where each would be located in the building. **Critique each** for its merits, aesthetics, and limitations in this building and **explain** your choice of the better option.



- 3 pts. 3. Informed by your discussions of questions one and two, **propose and diagram** an integrated water use and conservation plan (Eden Project and BedZED are good examples) for the building and its site, from supply to discharge. **Explain** how each element contributes to water conservation and quality.



Planted with a colorful Japanese maple tree selected by Fujimoto, the main entrance is protected by a canopy and encased with glass. As with the skylights, rolling screens behind the transparent front door provide much-needed privacy from the neighbors.